U.S. Department of the Interior

Wildland Fire Management

Fiscal Year 2022 ANNUAL REPORT AND LARGE FIRE REVIEW

Contents

The Department of the Interior's Wildland Fire Management Program works collaboratively with Federal, State, and Tribal partners to ensure firefighter and public safety while reducing wildfire risk across the country. The program includes the Office of Wildland Fire and four bureaus that manage wildland fire activities—the Bureau of Indian Affairs, Bureau of Land Management, National Park Service, and U.S. Fish and Wildlife Service—along with other Interior offices and bureaus that contribute to wildland fire management.

This document addresses reporting requirements for fiscal year 2022, as described in Division O of the Consolidated Appropriations Act, 2018 (Public Law 115–141, 132 Stat. 1061).

www.doi.gov/wildlandfire

Executive Summary

Division O of the Consolidated Appropriations Act, 2018 (Public Law 115–141), amended the Balanced Budget and Emergency Deficit Control Act to provide additional new budget authority for wildfire suppression for Fiscal Years (FY) 2020 through 2027. Under this provision, otherwise known as the Stephen Sepp Wildfire Suppression Funding and Forest Management Activities Act, the Department of the Interior (DOI) and Department of Agriculture (USDA) were authorized a total of no more than $2.45 billion in additional new budget authority for wildfire suppression operations for FY 2022. The Consolidated Appropriations Act, 2022, appropriated $330.0 million for the Interior Department and $2.12 billion for the USDA Forest Service through each department's Wildfire Suppression Operations Reserve Fund.

The Interior Department's Wildland Fire Management (WFM) budget is coordinated by the Office of Wildland Fire (OWF), which develops budget guidance and allocates funding to the Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), National Park Service (NPS), and U.S. Fish and Wildlife Service (FWS). The bureaus use this funding to carry out work in accordance with established WFM policies, program direction, and guidance.

Public Law 115–141 requires the Secretaries of Agriculture and the Interior (as applicable) to submit to Congress and make available to the public a report within 90 days after the end of the fiscal year if the Secretary used the additional budget authority provided in that fiscal year. This report addresses the requirement included in Public Law 115–141, with review and analyses of (1) risk management, (2) suppression management, (3) landscape considerations, (4) fire summaries, (5) financial reporting, (6) lessons learned, and (7) recommended enhancements.

To complete DOI's analysis for FY 2022, the Department selected six large wildfires, representing a wide range of geographic areas with varying incident objectives, strategic courses of action, and costs. Because wildfires are unique events subject to incident-specific conditions, risks, and management decisions, sampled fire information is supplemented with general program analysis information.

DOI's total suppression activity costs for FY 2022 were $649.7 million, which includes $396.4 million funded from the WFM account and an additional $253.3 million transferred from the Wildfire Suppression Operations Reserve Fund to the WFM account for emergency wildfire suppression operations. Budget outlays for suppression operations included direct wildfire incident accounts and non-incident-specific wildfire support accounts (e.g., aviation contracts servicing multiple fires).

Fires may span fiscal years, and costs associated with a wildfire incident may take multiple fiscal years to resolve as items such as cost-share agreements, cost-recovery efforts, and invoice submissions are reconciled. Continuing costs from FY 2021 wildfires are reflected in DOI's total costs in FY 2022. Similarly, some of the costs of fires that started in FY 2022 carried forward into FY 2023.

Although this report focuses on DOI, wildfire cannot be managed independently by a single agency. The backbone of wildland fire management in the United States is partnership,

collaboration, and assistance across boundaries—among Federal, Tribal, State, and local agencies and with the engagement of public and nongovernmental organizations. Wildfire outcomes vary considerably and are influenced by fire management plans; community and resource preparedness; and on-incident conditions, options, and decision making.

The evaluation undertaken to prepare this report highlighted the following:

- The importance of a stable and well-cared-for workforce;
- The impact of climate change on fire, resources, and assets; and
- The importance of holistic coordination and participation.

Fiscal Year 2022 Overview

Summary of National Fire Activity

In total, all agencies reported more than 59,000 wildfires nationally. Across the United States, more than 7.2 million acres burned.[1] Based on wildfires reported for all jurisdictions as of early November 2022, the number of acres burned in the United States during FY 2022 was approximately 108 percent of the 10-year average. The number of fires during FY 2022 also was above average. The Alaska, Southern, Southwest, Great Basin, and Northwest geographic areas reported above-average fire occurrences in 2022. The Eastern and Rocky Mountain geographic areas experienced average fire activity, and the Southern California geographic area experienced below-average activity. DOI had protection responsibility for more than 5,500 fires with more than 2 million acres burned.[2] The Nation spent 10 days at the second-highest level of wildfire preparedness, and more than 43,000 firefighters were deployed during summer 2022 to support firefighting efforts.[3]

Significant fire activity remained lower in early winter of FY 2022. Large fires were largely confined to the Southern area except for a significant fire outbreak in December 2021 across Kansas, Oklahoma, and Texas. A significant fire occurred near Big Sur, California, during an offshore wind event in January 2022. Fire activity increased during late winter, especially across the Southern area, bringing the year-to-date number of fires and acres burned as of March 2022 to nearly double the 10-year average.

Fire activity continued to increase in the spring of 2022, mostly across the Southern Area, Southwest Area, and the plains of the Rocky Mountain area. The Hermits Peak fire in New Mexico, notably the largest in State history, required sustained support from many interagency partners. Late spring activity increased, mostly across the Southwest area but also across portions of California, the southern Great Basin, and southern Colorado.

[1] National wildfire data gathered from Incident Management Situation Report from National Interagency Coordination Center.
[2] National wildfire data gathered from Incident Management Situation Report from National Interagency Coordination Center.
[3] Information gathered by National Interagency Coordination Center reflecting all reporting agencies.

Fire activity gradually increased in summer 2022 across much of the West except the Southwest, which saw a rapid decrease in activity during the latter half of June. Fire activity rapidly increased across Alaska in June 2022 but then decreased in late July, as activity transitioned into Texas and Oklahoma. Large fires began to emerge in central Idaho, Montana, and northern California toward the end of July, as lightning followed prolonged hot and dry summer conditions. Fire activity continued across much of Texas and Oklahoma through mid-August before a rapid decrease in activity due to heavy rainfall that occurred during the latter half of the month.

Large fires emerged across California, Oregon, Washington, Idaho, and Montana in late July and continued into late August. Significant fires continued across the Northwest, northern Rockies, California, and northern Great Basin through early fall. Precipitation events reduced fire activity across those areas, although fire activity continued in portions of the Northwest, Idaho, and western Montana.

The United States has maintained reciprocal cooperative agreements for resource sharing during peak fire activity with Canada, Mexico, Australia, and New Zealand. During FY 2022, the United States did not formally request fire resources or large-scale assistance from international partners.

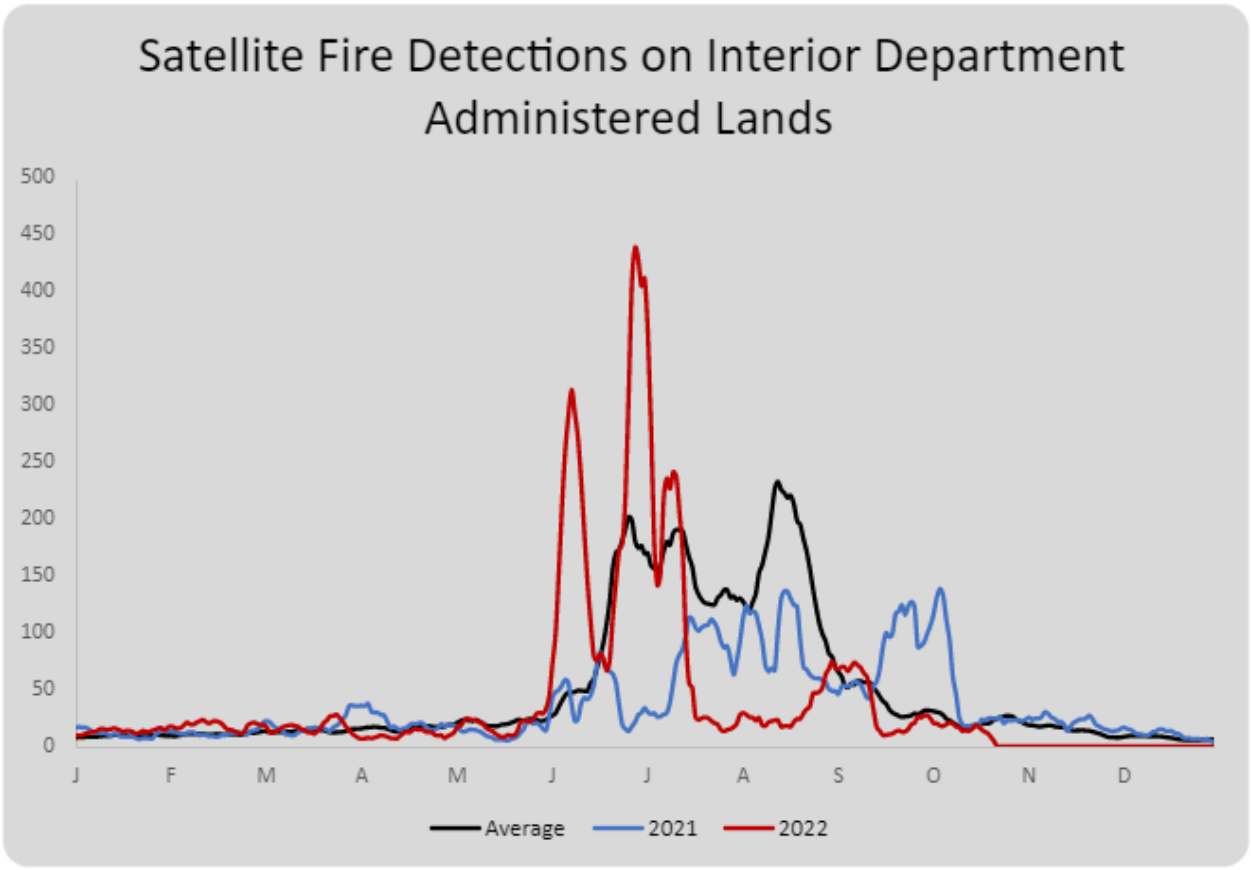

Figure 1. The 7-day running average for satellite heat detection on Interior Department lands for January to November 2022, illustrating the fire year.

Source: Data are from Moderate Resolution Imaging Spectroradiometer (MODIS).

Figure 1 shows the seven-day running average of the total number of heat points, or fire locations, detected by satellite on Interior Department lands for the past 20 years. The black line represents the 20-year average, the blue line represents 2021, and the red line represents 2022. The Interior Department experienced several points significantly above average during June and July, and fire activity also increased in September 2022. This impact, and the high level of activity supporting partners, contributed to the need to use the Wildfire Suppression Operations Reserve Fund. In addition, several large fires from FY 2021 continued into FY 2022, resulting in the use of suppression funds early in the fiscal year and the need to execute Reserve Fund transfers relatively early in the year (i.e., November 2021).

Workforce, Health, and Well-Being

In FY 2022, Bipartisan Infrastructure Law (BIL) authorities and funding provided an opportunity for the Department of the Interior and USDA Forest Service Wildland Fire Management programs to build upon existing efforts to help grow and sustain the wildland firefighter workforce and enhance firefighters' health and well-being. Working with the Office of Personnel Management (OPM), DOI and the Forest Service developed a new Wildland Firefighter Management job series (GS–0456) to improve career paths and position management. The BIL also provided funding for special pay supplements for firefighters that will last through FY 2023. In addition, the Interior Department, USDA Forest Service, and the National Wildfire Coordinating Group (NWCG) worked together to begin review of occupational environmental hazards, as required by the BIL, and identify effective mitigations that can be implemented or further enhanced to help protect firefighters. Further, the Interior Department and USDA Forest Service established a joint Wildland Firefighter Behavioral Health Program to focus on support for the mental health needs of firefighters, including post-traumatic stress disorder care. Collectively, all these efforts during FY 2022 helped to build the foundation for a 360-degree support approach for wildland firefighters' health and well-being.

National Guard and Military Assistance

National Guard assistance with wildfires is provided by individual States under State active-duty status or through the Department of Defense (DOD) under Federal duty status. Assistance varies from year to year depending on the needs. The National Guard often provides aviation, ground forces and hand crews, security and road guards, and other requested resources under State active-duty status. During 2022, the National Guard was involved in fighting wildfires in Arizona, California, Colorado, Florida, Idaho, Kansas, Massachusetts, Nebraska, New Mexico, Nevada, New York, Oklahoma, Oregon, Tennessee, Texas, Washington, and West Virginia. Since 1975, DOD has provided temporary support to fill capacity gaps when resource demands are high in numerous geographic areas and Federal and State capabilities are stretched thin. In 2022, the National Multi-Agency Coordination Group requested, and DOD provided, the following resources:

- Modular Airborne Fire Fighting System (MAFFS)
  MAFFS provide a "surge" capability to boost wildfire suppression efforts when commercial airtankers are fully committed or not readily available. Two available MAFFS were ordered and used in Idaho and Oregon.

- Distributed Real Time Infrared (DRTI)
  DRTI provides critical surge and gap capability for the wildland fire community in fire detection, creating real-time perimeter maps and providing real-time infrared video to frontline operations personnel and planners. Two DRTI units were ordered and used for 103 days.

National Multi-Agency Coordination

The National Multi-Agency Coordination Group (NMAC) is composed of wildland fire representatives from the Interior Department, USDA Forest Service, the U.S. Fire Administration (which is part of the Department of Homeland Security's Federal Emergency Management Agency), and the States.

NMAC makes decisions and takes actions to perform the following:

- Direct, control, allocate, and reallocate resources among and between geographic areas to meet national priorities.
- Identify trends and issues concerning critical resources, fire potential, and resource values at risk.
- Analyze existing data and information on current and predicted initial attack, large fire potential, large fire workload, threats to public safety, and critical resource shortages.
- Manage Area Command, Type 1, and—during high Preparedness Levels (PL)—Type 2 Incident Management Teams (IMT) by monitoring work/rest cycles and determining IMT assignments when demand exceeds supply nationally.

Establish the national wildfire PL, which is an indicator of fire activity, fire potential, and resource availability.

With 2022 came new and unique challenges for NMAC. Some of the most prominent challenges included the following:

- Began implementation of Complex Incident Management Teams (CIMTs).
  - The current Incident Management Team (IMT) model was not created for the challenges of large fire increasing complexity and volume. To enhance response capacity and address challenges associated with maintaining an adequate number of IMTs for the Nation's wildfire response, a new model was developed and began implementation. NMAC, along with the Fire Management Board and NWCG, provided leadership for the new business model and cultural changes, which require commitment and coordination among the agencies, partners, and cooperators to align qualifications, expectations, and standards and to manage IMTs more efficiently.

    - This new model combines aspects of both Type 1 and Type 2 IMTs to recognize and align with the current complex wildfire environment, providing more efficient management and mobilization.
    - This new model provides more equitable distribution of workload and streamlines training and qualification with standardized capability.
    - During 2022, partners focused on the first phase, which involved realigning the standards for qualifications, training, and position typing to support CIMT Command and General Staff personnel.
- Dealt with supply chain limitations and shortages for firefighting supplies, especially water handling equipment.
- Experienced limited resource availability and an increased number of unfilled orders (e.g., handcrews, management, and support positions) between April and June due to increased early fire season activity as Federal agencies worked to onboard the seasonal workforce.
- Faced shortages of staff to work in regional and national fire caches, along with backlogs in refurbishing 2021 equipment and an early 2022 fire year start, which slowed delivery of firefighting supplies and equipment.

Supported by subject matter experts and workgroups, NMAC successfully met those challenges by working together to provide leadership and timely decision making to manage wildfires and resources safely and effectively.

Methodology

As required by Public Law 115–141, the Interior Department analyzed a sample of large fires from 2022. The fires were selected by evaluating the largest fires over which the Interior Department had jurisdiction responsibility to represent a range of geographic areas, costs, and suppression strategies. This approach was designed to concisely survey this broad variation across Interior Department circumstances and landscapes to adequately capture, summarize, and report relevant information.

Additional information is provided from general program data analysis. Evaluating individual events and general program information helps identify common approaches, best practices, and lessons learned that can be used to enhance programs.

Using sampling to draw broad conclusions related to large wildfires can be challenging because each wildfire entails a unique combination of environmental conditions; risks; management objectives; resource availability and application; and incident management options, strategies, and decisions.

Table 1.
Fiscal Year 2022 Interior Department Fires Selected for Analysis

Agency	Fire Name	FY 2022 Interior Department Cost*	Size (Acres)	State	Geographic Area
BIA	Contreras	$2,227,303	29,482	Arizona	Southwest
BIA	Elmo	$5,982,417	21,349	Montana	Northern Rockies
BLM	East Fork	$4,726,365	166,760	Alaska	Alaska
BLM	Rum Creek	$4,270,179	21,347	Oregon	Northwest
FWS	Apoon Pass	$94,155	89,910	Alaska	Alaska
NPS	Washburn	$10,204,866	4,886	California	Southern California

*Costs include the Interior Department budget obligations for FY 2022. These costs are not the same as total estimated costs cited in the "Sampled Fire Summaries" section, which provides current estimates of total known costs to date, including those during FY 2023.

Risk Management

The foundational wildland fire management documents—the Review and Update of the 1995 Federal Wildland Fire Management Policy (2001) and the Guidance for Implementation of Federal Wildland Fire Management Policy (2009)—highlight the concepts of risk and fire consequences by noting that risk management underlies all fire management activities, those risks must be thoroughly understood, and the consequences of a wildland fire dictate the approach to fire response.

All wildfire presents inherent risks. The Wildland Fire Decision Support System (WFDSS) assists fire managers and agency administrators in making strategic, tactical, risk-based decisions for wildfire incidents using a deliberative risk analysis process. Three risk components are analyzed:

- **Values** are the things of concern (e.g., social, cultural, economic, or ecological resources) that could be lost or damaged because of a fire.
- **Hazard** is measured by the intensity, severity, and spatial extent of the fire and is influenced by the physical conditions of the fire environment.

- **Probability** refers to the likelihood of the fire affecting values.

The wildfires analyzed for this report demonstrate several common risks that influenced management decisions: firefighter and public safety; impacts on Federal and private infrastructure; stakeholder involvement at Federal, State, Tribal, county, local, and private levels; sociopolitical and economic impacts on affected communities; and damage to (or loss of) natural resources and ecosystem services.

In addition to common risks, the analysis showed several incident-specific factors that also influenced risk management decisions, such as geographic location and access (e.g., wilderness versus urban interface); time of year (e.g., early season or late season); availability of firefighting resources; condition of fuels; land ownership; the presence of threatened and endangered species; and the presence of cultural sites.

Table 2.
Residences and Other Structures Threatened and Lost
in 2022 Interior Department Wildfires Selected for Review

	Threatened	Lost	Protection Rate (%)
Residences	6,570	8	99.88
Other Structures	2,988	12	99.60
Total	9,558	20	99.79

Firefighter and public safety are the foremost concerns in strategic and tactical decision making. The suppression strategy of each incident aligned with Federal fire policy principles to maximize firefighter and public safety and protect values at risk. Suppression strategies minimized firefighter exposure to risk through strategic placement of firefighters; judicious management of resources and daily work assignments; use of indirect and point protection tactics; taking advantage of natural and man-made barriers; monitoring the fire perimeter where no threat to values is present; and directing appropriate resources to the right place at the right time to achieve the highest probability of success.

Table 3.
Reported Injuries and Maximum Number of Incident Personnel in 2022 Interior Department Selected for Review

Fire Name	Reported Injuries	Maximum Reported Personnel
Apoon Pass*	(see East Fork)	(see East Fork)
East Fork	2	255
Rum Creek	9	2,122
Contreras	0	440
Washburn	21	1,623
Elmo	2	616
Total	34	5,056

**Apoon Pass was included in the delegation of authority with East Fork fire, and incidents were managed concurrently. For efficiency, single-point ordering was established to East Fork fire. Resources were then tracked locally on the incident and assigned work on Apoon Pass fire as necessary.*

Note: These data demonstrate a relatively low reported injury rate. The Interior Department recognizes the inherent risks of wildland fire but is always striving to reduce injuries.

Source: Table information derived from Integrated Reporting of Wildland-Fire Information (IRWIN) incident histories.

The 2022 fire year brought many challenges. Some were familiar (e.g., prioritizing limited resources), but others presented a new set of risk management challenges both before and during the fire season (e.g., supply and logistical challenges). Regardless of the challenges, the interagency wildland fire management community has worked hard over the years developing and refining processes and tools, based on lessons learned, to help guide and inform risk management decisions.

Suppression Management

The six fires analyzed in this report burned more than 333,000 acres, with 34 reportable injuries. Numerous structures were threatened, some in challenging and isolated areas, but only 20 structures were lost. As noted in the Executive Summary, costs associated with a wildfire incident may take multiple fiscal years to resolve as items such as cost-share agreements, cost-recovery efforts, and invoice submissions are reconciled. As of September 30, 2022 (the end of FY 2022), the Interior Department's response costs for these six fires totaled $27.5 million. By December 15, 2022, the costs had grown to $43.5 million.

Some of these fires exhibited extreme fire behavior. In some areas, the fire damaged natural and cultural resources or community infrastructure. In other areas, the fire assumed a natural disturbance role and produced landscape benefits.

The Interior Department relies on analytical techniques (e.g., fire weather forecasting, fire danger and fuels analysis, and intelligence and resource status information) to help predict what areas might have conditions that support an above-normal occurrence of wildfires or fire behavior.

Each geographic area experiences significant variations in the number of acres burned from year to year without a consistent pattern. The Preparedness program provides the resources to manage the complexity and uncertainty of wildfire occurrence by ensuring that a flexible, capable, qualified, and mobile workforce is available to respond quickly whenever and wherever wildfires occur.

Significant fire activity has typically occurred in only a couple of geographic areas and generally not at the same time—enabling the shifting of resources on the basis of fire response needs. But as climatic and weather patterns continue to change and intensify, fire seasons become longer and include not only more extreme fire behavior but also more frequent and concurrent demands (and increasing strain) on resource availability nationally.

Extended periods of significant fire activity affect operational resources, but they also strain support personnel, particularly dispatchers, along with administrative and procurement staff. In addition, these scenarios often produce increased costs for suppression response as more personnel and equipment (e.g., vehicles and aircraft) are used for longer periods of time and the need for goods and services to support these efforts increases.

The past 10 years have demonstrated increasingly problematic levels of fire activity, including longer fire seasons, increased complexity, and more mega-fires.[4] An extremely busy fire season only compounds other challenges, including the scarcity of personnel and resources.

[4] The term *mega-fire* is used for extraordinary wildfire characterized by intensity, size, duration, and exceptional difficulty of control; no precise universal definition exists. Used here, it denotes wildfires covering more than 100,000 acres.

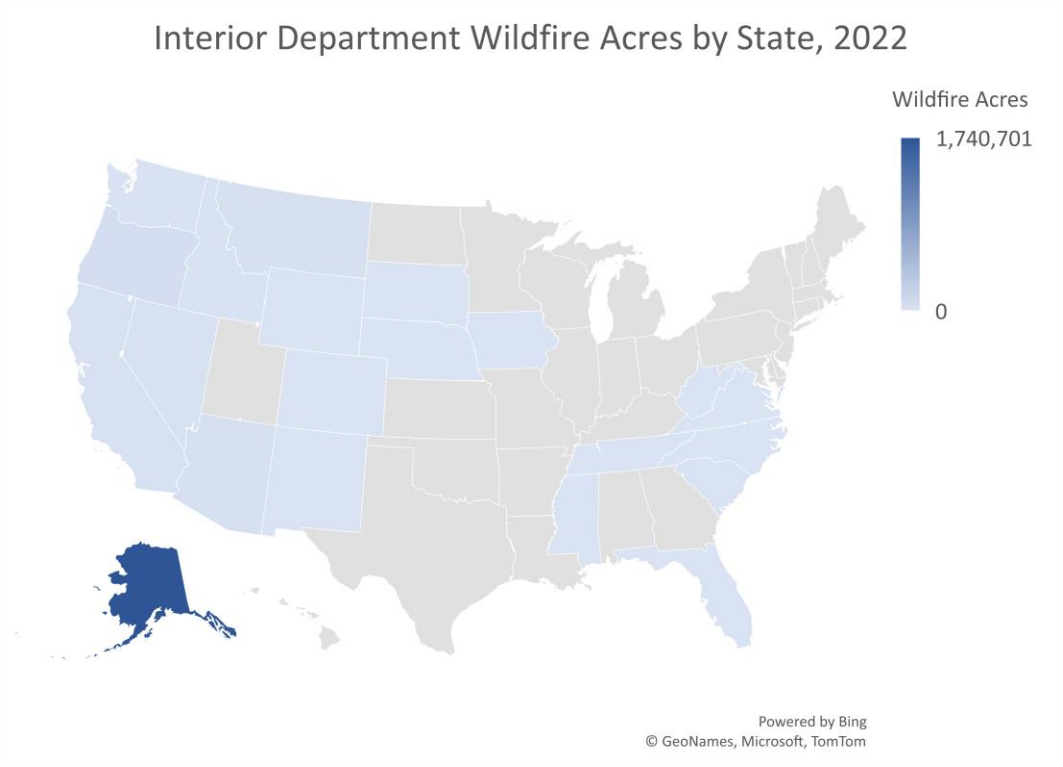

Figure 2. Map that shows a comparison of Interior Department wildfire acres by State.

Note: Alaska experienced the most burned acres, at more than 1.7 million. Oregon, California, Arizona, Montana, and Nevada each experienced more than 20,000 burned acres.
Source: Information derived from Integrated Reporting of Wildland-Fire Information (IRWIN).

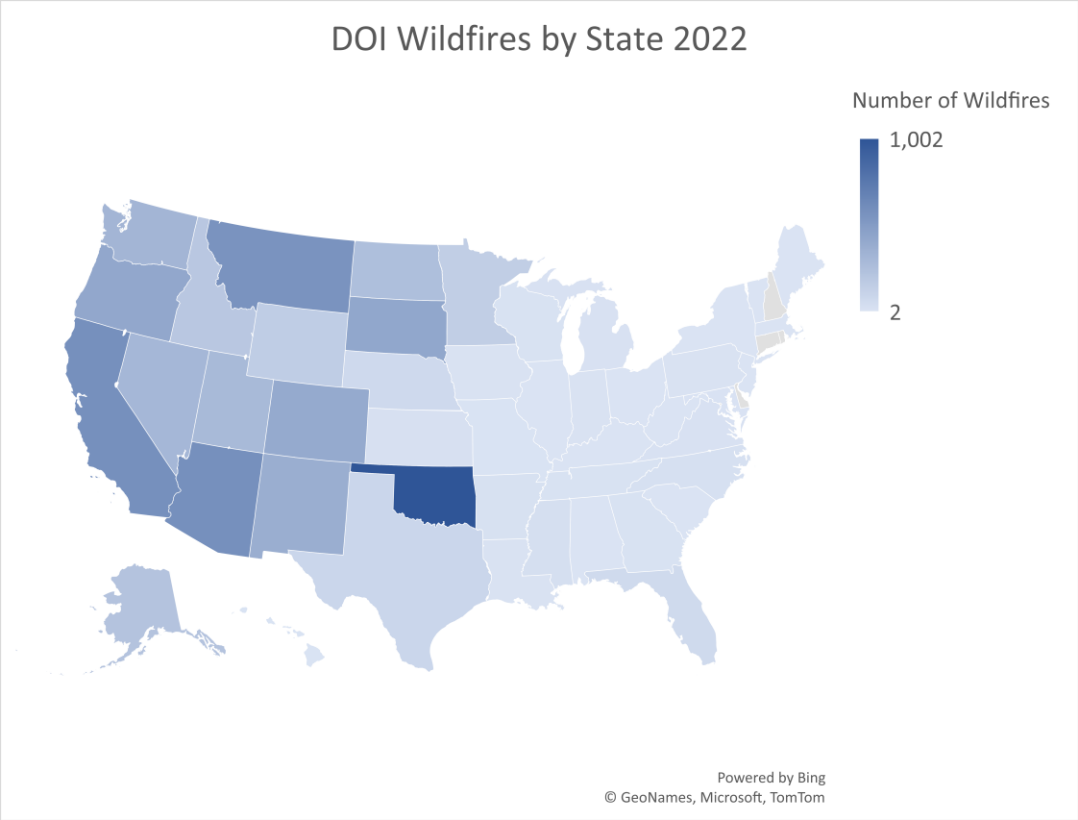

Figure 3. Map that shows the number of fires in 2022 under Interior Department jurisdiction or protection, by State

Note: More than 7,000 incidents occurred nationwide, and that total does not include assistance to additional partners. Oklahoma, Arizona, California, and Montana each had more than 500 fires. Source: Information derived from Integrated Reporting of Wildland-Fire Information (IRWIN).

Figures 2 and 3 help to highlight the variability of wildfire occurrence and outcomes across the country. Some areas (e.g., Oklahoma for 2022) may have a relatively higher fire occurrence while not necessarily burning vast acres. Conversely, some places may have a relatively lower fire occurrence but experience a substantially higher number of acres burned (e.g., Alaska). Neither scenario necessarily predicts nor describes the specific types or amount of local impacts experienced, but in either case, the impacts are mitigated by effective fire response. An increasing, prolonged wildfire workload is likely to erode effective response over time and have significant impacts on response capabilities. Increasing and maintaining an adequate workforce would provide improved capability at critical moments throughout the year, disperse workload-reducing burnout, and help improve programmatic stability for the Interior Department and the interagency wildland fire community.

The Interior Department continues to implement workforce transformation. During 2022, in implementing the Bipartisan Infrastructure Law, Interior Department partnered with the Office of Personnel Management and USDA Forest Service to develop a distinct wildland firefighter job series, implement a temporary base salary increase for Federal wildland firefighters for FY 2022

and FY 2023, and initiate a joint DOI-USDA mental health and wellness program for wildland firefighters. The Interior Department also began efforts to modernize its wildland fire position descriptions and position management strategy. However, further investment is needed to complete this work and is planned for FY 2023 and beyond.

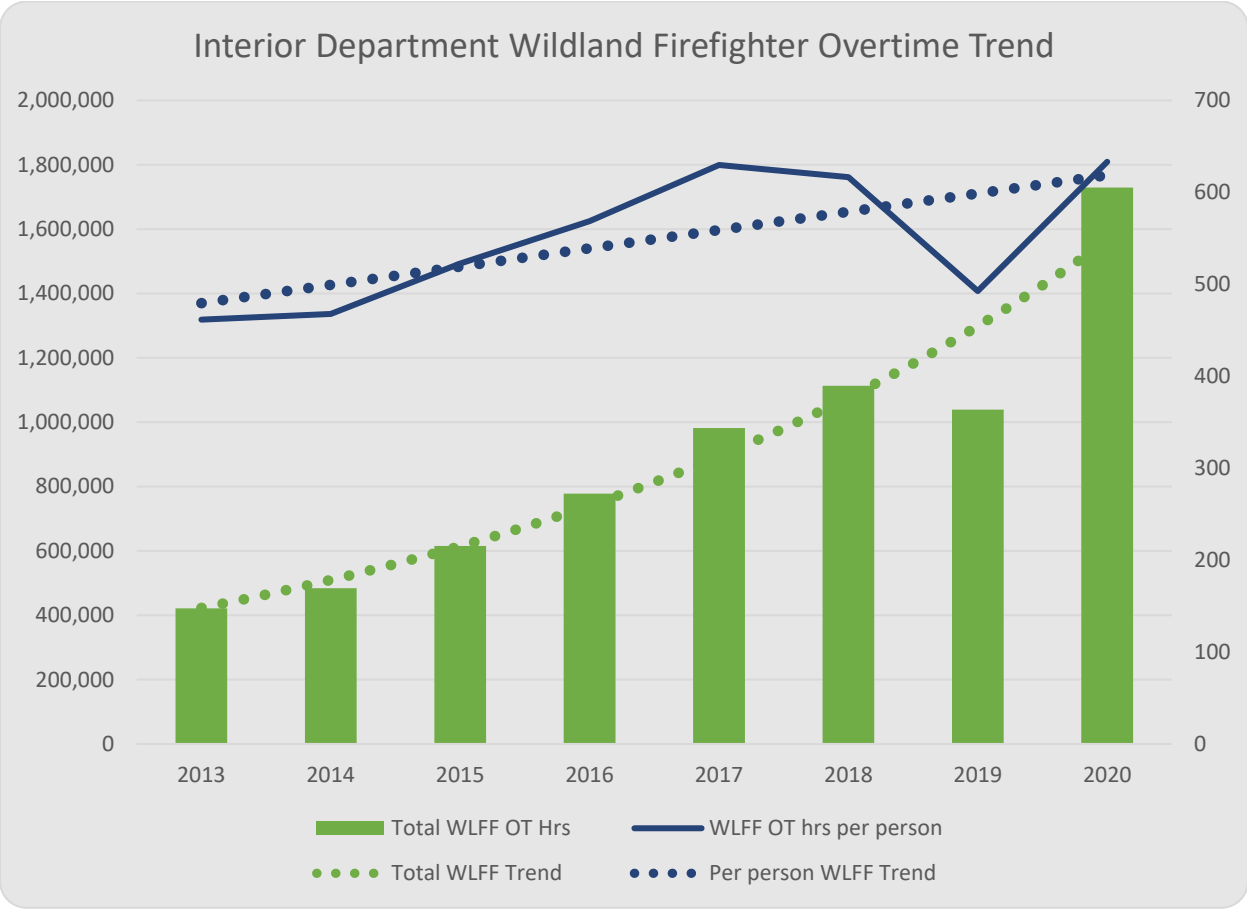

Figure 4. Graph that demonstrates the trends of increasing total volume of overtime worked (left column) and overtime hours per person worked (right column).

Figure 4 reflects significantly increasing workload and overtime for Interior's firefighting personnel. An extremely high workload can contribute to higher attrition rates, increased mental health issues, and other impacts. The Interior Department is continuing its efforts to develop long-term solutions, collaborating with USDA Forest Service, OPM, and other agencies in the Administration.

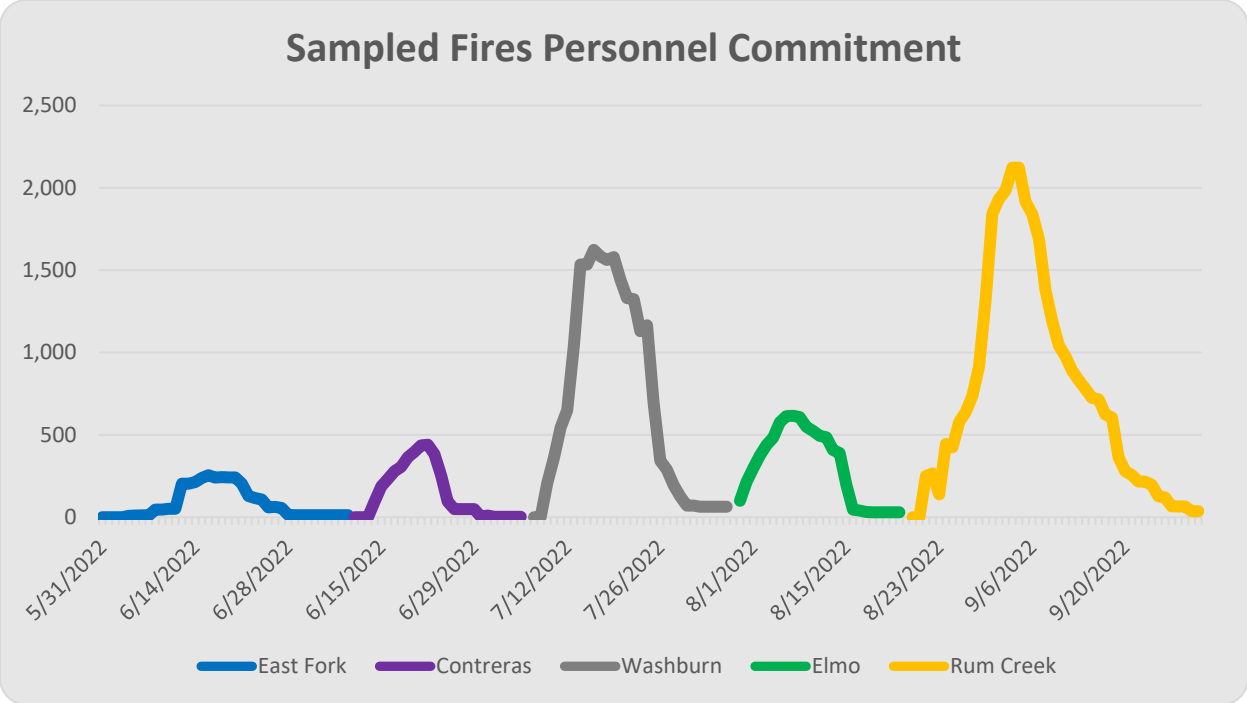

Figure 5. Graph that shows the total number of personnel committed to the fires analyzed for 2022.

Note: This graph shows the significant number of people responding to a fire and the considerable duration of the commitment of personnel. Apoon Pass does not appear because it was included in the delegation of authority with East Fork fire; the incidents were managed concurrently, with personnel on both incidents, but were single-point ordered under East Fork fire.

Landscape Considerations

Fire behavior is determined by three primary factors: weather, vegetation (fuels), and topography. However, numerous variables influence a wildfire's effects at broader landscape scales. Vegetation treatment history and frequency play a vital role in a fire's broad-scale impact. Fire is a natural process that occurs on the landscape and provides numerous benefits. But with climate change, accumulated fuels resulting from decades of fire suppression, and population growth, fire risks are of much greater concern.

When implemented strategically, fuels treatments reduce fire impacts to values at risk. Along with treatment design, the strategic placement of treatments further helps protect values at risk at the landscape scale. However, when historic drought and weather combine with cured fuels, even the best designed and located treatments may not be fully effective to protect values.

During the 2022 fire season, most of the western United States continued to experience severe to extreme drought conditions, according to the National Integrated Drought Information System. The intensity of drought conditions that have continued from 2021 created dangerously dry fuels that contributed to extremely active and uncontrollable wildfires. Drought continued to build throughout the country, particularly in the Southwest. Portions of the Southwest and west Texas received no measurable precipitation in April, and fire activity in that region markedly increased.

Although the southwestern United States received much-needed monsoonal moisture beginning in late June, dry weather and an offshore wind pattern led to a fire season that extended into October throughout the Pacific Northwest. In Alaska, hot, dry conditions at the beginning of June followed by lightning across southwest Alaska and the western interior ignited many fires, with fire activity continuing to increase across the interior through the end of the month before consistently cooler temperatures and precipitation arrived at the end of July.

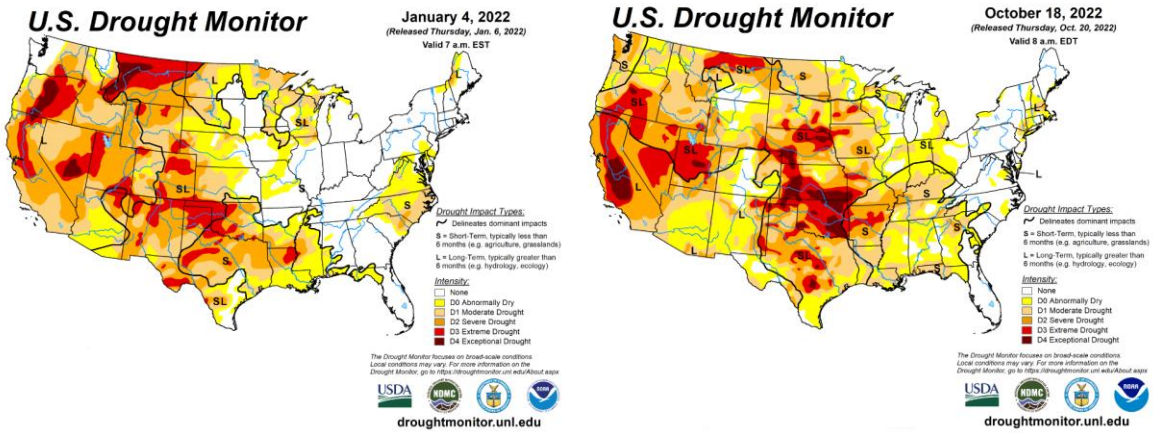

Figure 6. Maps that show levels of drought across the United States on January 4 and October 18, 2022.

Note: The maps display continued expansive, extreme, and exceptional drought.
Source: The U.S. Drought Monitor, which is produced through a partnership between the National Drought Mitigation Center, USDA, and NOAA.

From 2015 to 2022, annual appropriations for the Interior Department's fuels management activities increased by $63.0 million, from $164.0 million to $227.0 million, a 38-percent increase in funding. In addition, for FY 2022, Interior received $55.0 million in disaster relief supplemental appropriations and $252.6 million of Bipartisan Infrastructure Law funds for fuels management. Fuels treatments increased from approximately 939,000 acres in 2015 to almost 2.2 million acres in 2022.

The Interior Department has made substantial investments in the Fuel Treatment Effectiveness Monitoring System, which assesses the effectiveness of fuels treatments with wildfire interactions. Thorough analysis of these interactions takes time to complete. Monitoring assessments are ongoing for 2022 fires, with more than 355 assessments completed out of the 744 identified possible interactions between wildfires and fuels treatments. Completed assessments for 2022 fires indicate that when wildfire interacted with fuels treatments, it changed the fire behavior 84 percent of the time, and that treatments helped with control and/or management of wildfires 86 percent of the time. Five-year averages for DOI assessment show that 82 percent changed the fire behavior and 81 percent helped with control and/or management of wildfires across more than 6,500 monitored interactions.

Often, the ecological outcomes depend upon complex interactions, response factors, and subsequent conditions that may not be readily apparent for some time. In FY 2022, the Interior

Department managed approximately 95,000 acres of wildfire that achieved land management objectives.[5]

Summaries of Sampled Fires

The Interior Department experienced more than 5,500 fires on Interior or Tribal lands in 2022 and provided supporting protection on more than 1,000 additional fires. The six large wildfires selected for this review represent a wide range of geographic areas with varying incident objectives, strategic courses of actions, and costs. As noted previously, each wildfire is a unique event. Suppression responses and costs are influenced by a multitude of factors, including location, vegetation, values at risk, socio-political setting, hazards, and the availability of resources.

The **Apoon Pass Fire** was ignited by lightning on the evening of June 9, 2022, within the Yukon Delta National Wildlife Refuge in southwestern Alaska. The ignition was within the Limited Fire Management Option in the BLM Alaska Fire Service (AFS) Galena Fire Management Zone protection area. Initial full suppression actions were unsuccessful. The fire showed a high resistance to control due to tundra fuels at critically dry levels and natural barriers that typically slow or halt fire spread burning readily. Extreme fire growth initially threatened Native Allotments, cultural sites, and the community of Mountain Village. Due to the proximity of the Apoon Pass fire to the ongoing East Fork fire, 25 miles to the southeast, both fires were managed under one Type 2 Incident Management Team. Both fires occurred in a region of Alaska that historically had not experienced significant wildfire. Early snow melt coupled with drought in the region made the tundra fuels more receptive than normal to lightning ignitions, and several days of northeast winds pushed the fires toward values in the Yukon River corridor. After initial efforts to suppress the fire were unsuccessful, the fire was managed under a point protection strategy to protect values. Limited direct suppression tactics were used where needed. The fire was controlled on July 28, 2022, at 89,910 burned acres with suppression actions costing the Interior Department an estimated $126,000 as of December 15, 2022. The fire burned almost entirely on FWS lands though two native allotments were impacted. No structures or other values were reported as lost during this incident, and two injuries were reported.

The **East Fork Fire** in Alaska started by lightning between May 30 and 31, 2022, in southwestern Alaska on the Yukon Delta National Wildlife Refuge. The fire started in a Limited Fire Management Option area in the BLM Alaska Fire Service Galena Fire Management Zone protection area. This fire was considered contained at 166,760 acres on June 25, 2022, with suppression actions costing the Interior Department an estimated $5,420,000 as of December 15, 2022. An early snow melt coupled with drought in southwestern Alaska made the tundra—made up of grass and shrubs with sparse black spruce stands—receptive to lightning ignitions. Although the default response to a limited fire is monitoring, action was taken on this fire because of its proximity to several Native allotments. Initial actions focused on site protection; however, persistent dry fuels and northeast winds pushed the fire toward Saint Mary's, Pitkas Point, Mountain Village, and Pilot Station along the Yukon River, forcing firefighters to refocus their efforts on protecting those communities. Additional values at risk included cultural sites,

[5] Derived from National Fire Plan Operations and Reporting System wildfire acres reported to have achieved land management objectives.

fish camps and weirs, dispersed cabins, and subsistence hunting, fishing, and gathering areas. The fire eventually burned onto Alaska Native Claims Settlement Act (ANCSA) Corporation lands and within 3.7 miles of St. Mary's, prompting an evacuation notice for the community of about 500 residents. The IMT and BLM AFS Galena Zone worked with the Refuge, several Tribes, and ANCSA Native corporations, State emergency organizations, and the communities to ensure the safety of the residents. No structures were reported lost during the fire, but several Native allotments were affected. This fire, coupled with the nearby lightning-caused Apoon Pass Fire, occurred in a region that historically had not experienced much wildfire. The site of this fire was the farthest west an Incident Management Team has ever been deployed in Alaska, creating logistical and operational challenges related to the remoteness.

The **Rum Creek Fire** was ignited by lightning on Wednesday, August 17, 2022, approximately 17 miles northwest of Grants Pass, Oregon, on BLM lands but under the Oregon Department of Forestry (ODF) protection. The fire was contained at 21,347 acres, with suppression actions costing the Interior Department an estimated $18,314,000 as of December 15, 2022. The fire started in fuels consisting of timber, manzanita, grasses, and leaf litter on a ridgetop in steep and rugged terrain and was one of an estimated 50 fires that day that started from thunderstorms that moved across southwestern Oregon. Due to lack of access, heavy fuels, and difficult terrain, firefighters used a combination of direct and indirect tactics and structure protection actions. In addition to the main fire, firefighters responded to spot fires observed up to 2 miles away from the main fire. From late August through mid-September, critical fire weather conditions continued until remnants of tropical storm Kay brought cooler temperatures, higher relative humidity, and rain showers. By September 16, all evacuations from the Rum Creek Fire had been lifted. During the fire, more than 5,000 homes and 2,600 other structures were threatened, but only two structures were destroyed. Nine injuries occurred, and, tragically, one ODF contracted firefighter lost his life during the initial attack of the Rum Creek Fire.

The **Contreras Fire** started from lightning on June 11, 2022, on the Tohono O'odham (T.O.) Reservation in Southern Arizona. At the time of ignition, the area was under a fuels and fire behavior advisory for drought conditions, high temperatures, and the potential for above-normal fire behavior. The fire was managed under a full suppression strategy; however, due to the location of the fire in remote rugged terrain with limited access, firefighters employed modified tactics, including point protection of values at risk and allowing the fire to move into more favorable terrain where it could be engaged safely. The fire was contained on June 24 at 29,482 acres, with suppression actions costing the Interior Department an estimated $2,392,000 as of December 15, 2022. The fire threatened numerous natural resources, including the Baboquivari and Coyote Mountain Wilderness, threatened and endangered species (e.g., jaguar, Kearney's blue-star, Mexican spotted owl), and multiple cultural resources of the T.O. Nation. In addition, the fire threatened critical infrastructure, including Kitt Peak Observatory, Elk Horn Ranch, multiple T.O. Nation communities, and FWS infrastructure at Brown Canyon. The fire reached the Kitt Observatory, resulting in the evacuation of the Pan Tak community. No structures or other values were reported as lost during this incident.[6]

The **Washburn Fire** in California's Yosemite National Park started on July 7, 2022, with an undetermined cause. The fire started in an area with steep terrain, heavy fuel loading, and no

[6] Here is a video link from the Contreras fire showing the Kitt Observatory area.

recent fire history, which resulted in a high resistance to control. At the time the fire started, fire danger levels were approaching the 90th percentile, and the area was transitioning into peak fire season. Firefighters used a full suppression strategy, as topography and conditions allowed, with the primary focus on protecting the community of Wawona and the Mariposa Grove of Giant Sequoias. The fire was contained on August 1 at 4,886 acres, with suppression actions costing the Interior Department an estimated $11,617,000 as of December 15, 2022. Numerous closures and evacuations occurred, including the south entrance to the park, visitor facilities, the community of Wawona, Wawona Campground, and the Mariposa Grove area. Multiple natural and cultural resources were threatened, including Monarch Giant Sequoias, rare plants, Pacific fisher habitat, the Galen Clark Historic Cabin, Mariposa Archeological District, and the Mariposa Historical District. In addition, numerous values were at risk, including private inholdings on the adjacent Sierra National Forest. No structures were reported lost during the incident. By July 28, the park was able to return to near-normal operations, lifting most closures and evacuations.

The **Elmo Fire** was a human-caused fire that started on July 29, 2022, nine miles northeast of Niarada and eight miles west of Elmo, Montana, in the north-central part of the Flathead Indian Reservation. The fire was contained on August 21 at 21,349 acres, and suppression actions cost the Interior Department an estimated $5,617,000 as of December 15, 2022. Firefighters managed the fire under a full suppression strategy using a combination of direct and indirect tactics based on fuel loads, topography, and firefighter exposure and risk. Infrastructure and resource values at risk included the communities of Elmo, Dayton, and Big Arm; private businesses; residences along Lake Mary Ronan and Flathead Lake; powerlines; Chief Cliff Cultural Area; commercial Tribal timber in Confederated Salish and Kootenai Tribes Hog Heaven, Deep Creek, and Big Meadow; and State of Montana trust and private lands. Between August 1 and 5, environmental and fuel conditions resulted in extreme fire behavior, with several large fire growth days. On August 2, the fire crossed the Flathead Indian Reservation boundary, resulting in additional evacuations and the loss of five homes. BIA and the Montana Department of Natural Resources and Conservation formed a new delegation to jointly manage the fire. By August 14, conditions had moderated and all evacuations had been lifted.

As displayed in Table 4, in all these cases, responders were highly successful at protecting the values at risk.

Table 4.
Primary Residences and Other Structures Lost or Threatened
(of the 2022 Interior Department wildfires reviewed)

Fire Name*	Residences Lost	Residences Threatened	Other Structures Lost	Other Structures Threatened	Protection Rate
Apoon Pass	(see East Fork)	(see East Fork)	(see East Fork)	(see East Fork)	(see East Fork)
East Fork	4	250	4	1	96.91%
Rum Creek	2	5,374	6	2,803	99.90%
Contreras	2	180	2	51	98.30%
Washburn	0	581	0	4	100.00%
Elmo	0	185	0	129	100.00%
Total	8	6,570	12	2,988	99.79%

**Table information derived from Integrated Reporting of Wildland-Fire Information (IRWIN) incident histories.*
Note: In all cases, responders were highly successful at protecting these values.

Table 5 provides information on the various drivers of the costs of suppressing the sampled Interior Department wildfires.

Table 5.
Costs of Suppression Operations by Cost Driver, as a Percentage of Total Incident Costs
(for the 2022 Interior Department wildfires reviewed)

Cost Drivers						
Fire Name	Labor, Benefits, Travel (%)	Contract Services (%)	Aviation Contract (%)	Supplies, Materials, Goods (%)	Rent, Communications, Utilities, Equipment Rental (%)	Other, Grants, and Cooperative Agreements (%)
Apoon Pass	8.5	0.0	85.1	6.4	0.0	0.0
East Fork	31.9	33.3	24.1	7.2	3.3	0.3
Rum Creek	51.4	43.8	0.2	4.1	0.3	0.3
Contreras	36.6	3.5	14.3	2.6	42.7	0.4
Washburn	19.1	52.5	0.9	3.0	24.4	0.2
Elmo	15.3	16.6	0.6	2.5	65.0	0.0

Notes: These costs reflect Interior Department's budget obligations in FY 2022 only; complete cost data for these fires are not yet available. These figures do not reflect contributions from interagency partners for total incident costs.

Financial Reporting

The complex, dynamic nature of wildland fire management is reflected in the structure of the Interior Department's Wildland Fire Management program. The DOI WFM account comprises budget line items for Fuels Management, Preparedness, Suppression Operations, Burned Area Rehabilitation (BAR), Facilities Construction and Maintenance, and Joint Fire Science. In addition, DOI may access the Wildfire Suppression Operations Reserve Fund when it needs additional funding for suppression.

For FY 2022, Congress appropriated $1.026 billion in regular appropriations for the WFM account, $100.0 million in disaster relief supplemental appropriations for Fuels Management and BAR, and $407.6 million in appropriations for the Bipartisan Infrastructure Law. The BIL funding is available for the following activities: Preparedness, Fuels Management, BAR, and Joint Fire Science. In addition, Congress appropriated $330.0 million in new funding for the Wildfire Suppression Operations Reserve Fund. In total, more than $1.8 billion was appropriated for DOI's WFM program.

Figure 7 shows all FY 2022 appropriations for DOI WFM by activity.

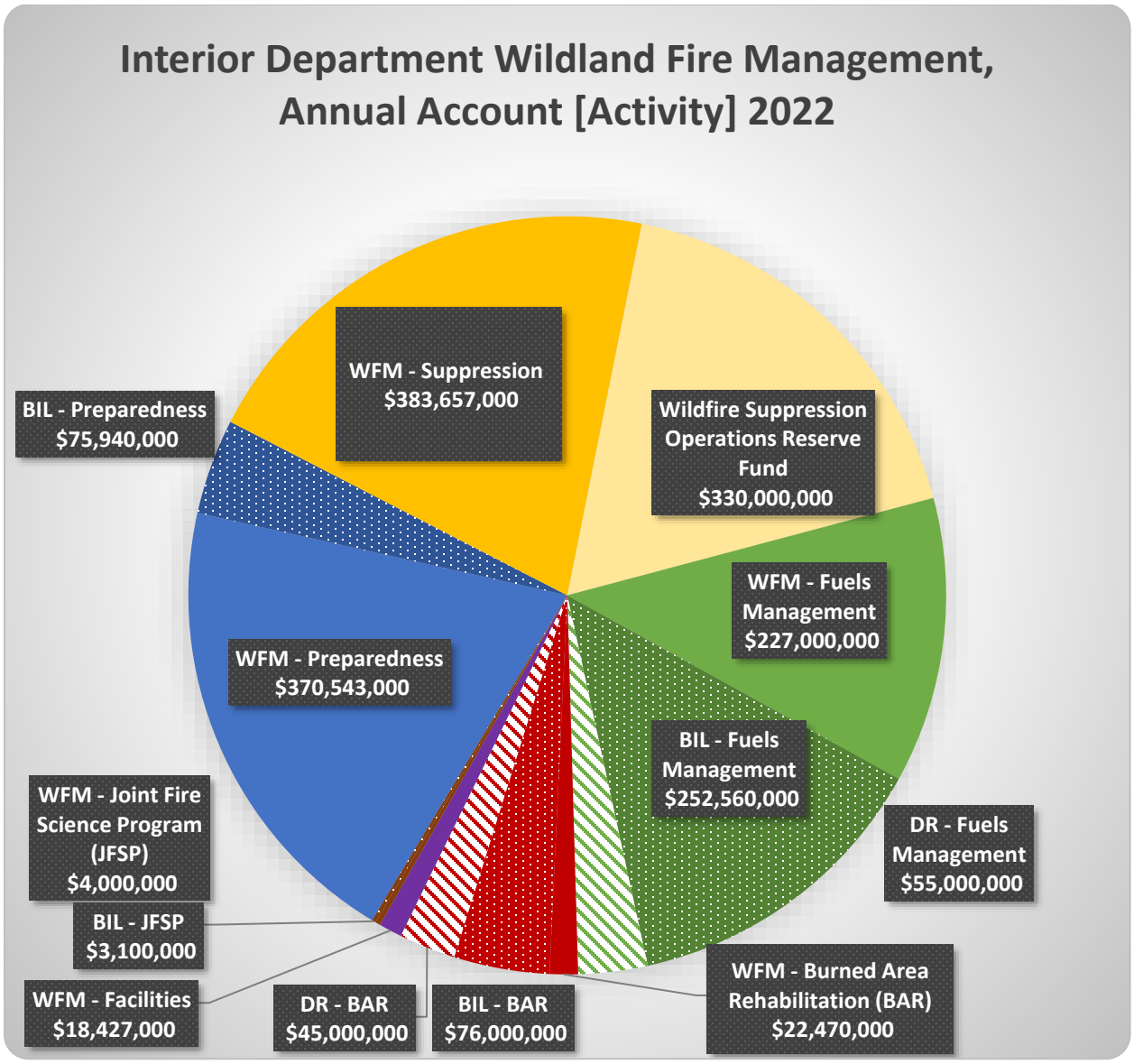

Figure 7. Chart that shows the Interior Department appropriations for DOI's Wildland Fire Management program by wildland fire activity for 2022.

Notes: "BIL" indicates appropriations from the Bipartisan Infrastructure Law. "DR" indicates Disaster Relief supplemental appropriations. "WFM" indicates Wildland Fire Management regular appropriations, which, along with the Wildfire Suppression Operations Reserve Fund, were included in the Consolidated Appropriations Act, 2022.

DOI's total WFM program costs (direct budget obligations) in FY 2022 were $1.45 billion, including obligations of funding provided through regular appropriations for the WFM account ($1.28 billion in obligations), disaster relief supplemental appropriations for Fuels Management and BAR ($77.5 million in obligations), and BIL appropriations for Preparedness, Fuels Management, BAR, and Joint Fire Science ($94.3 million in obligations).

Within the total budget obligations, the Interior Department's total suppression activity costs for FY 2022 were $649.7 million. This total includes $396.4 million funded from appropriations to the WFM account and an additional $253.3 million transferred from the Wildfire Suppression Operations Reserve Fund to the WFM account for emergency wildfire suppression operations.

Outlays of funding for wildfire suppression include spending from direct wildfire incident accounts and non-incident-specific wildfire support accounts (e.g., aviation contracts servicing multiple fires). Fires may span fiscal years, and costs associated with a wildfire incident may take multiple fiscal years to resolve as items such as cost-share agreements, cost-recovery efforts, and invoice submissions are reconciled. Continuing costs from FY 2021 wildfires are reflected in the Interior Department's total costs in FY 2022, and some of the costs of fires that started in FY 2022 carried forward into FY 2023.

Figure 8. Chart that shows national-level spending of Suppression Operations funding from the Wildland Fire Management account, in thousands of dollars and by cost driver, for FY 2022.

Notes: Labor expenses include personnel compensation and benefits and transportation of people. Contract expenses include, but are not limited to, contract firefighters, heavy equipment, incident support for catering and showers, retardant, and State/local/Tribal reimbursement for suppression assistance provided under cooperative agreements.

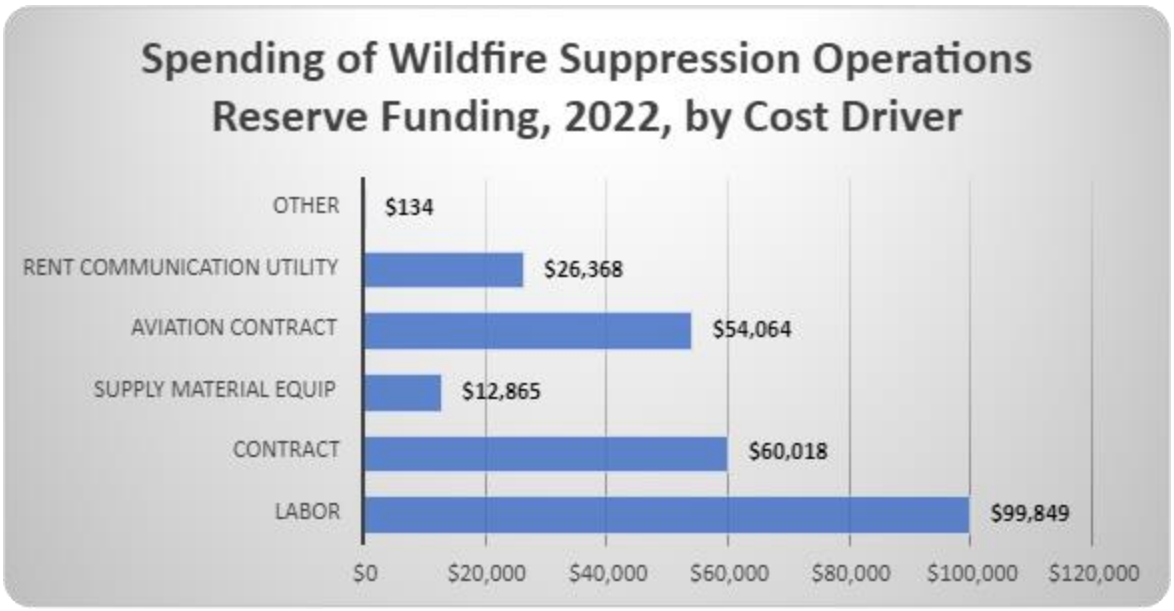

Figure 9. Chart that shows spending of Wildfire Suppression Operations Reserve Fund resources, in thousands of dollars and by cost driver, for FY 2022.

Note: Spending on labor is by far the most significant driver.

The Interior Department received approval for three funding transfers totaling $282.0 million from the Wildfire Suppression Operations Reserve Fund to the WFM account during FY 2022. The first took place on November 22, 2021 ($45.0 million), while operating under a Continuing Resolution; the second on July 13, 2022 ($200.0 million); and the third on September 27, 2022 ($37.0 million), as suppression funds available for obligation in the WFM account were exhausted. DOI used the transferred funding primarily for labor costs and vendor payments, providing necessary resources for wildfire response on lands administered by the Interior Department and to assist wildland fire partners in their response. The Interior Department provides significant support to Federal, Tribal, State, and local partners for wildfires that occur outside Interior Department-administered lands, and the Interior Department receives reciprocal support for Interior Department jurisdictional fires. As demonstrated in Figure 10, funding transferred from the Wildfire Suppression Operations Reserve Fund supported wildfire response activity on lands of various jurisdictions. Although 90 percent of the funding supported suppression response on Federal lands, the funding also supported Tribal, State, and local cooperators.

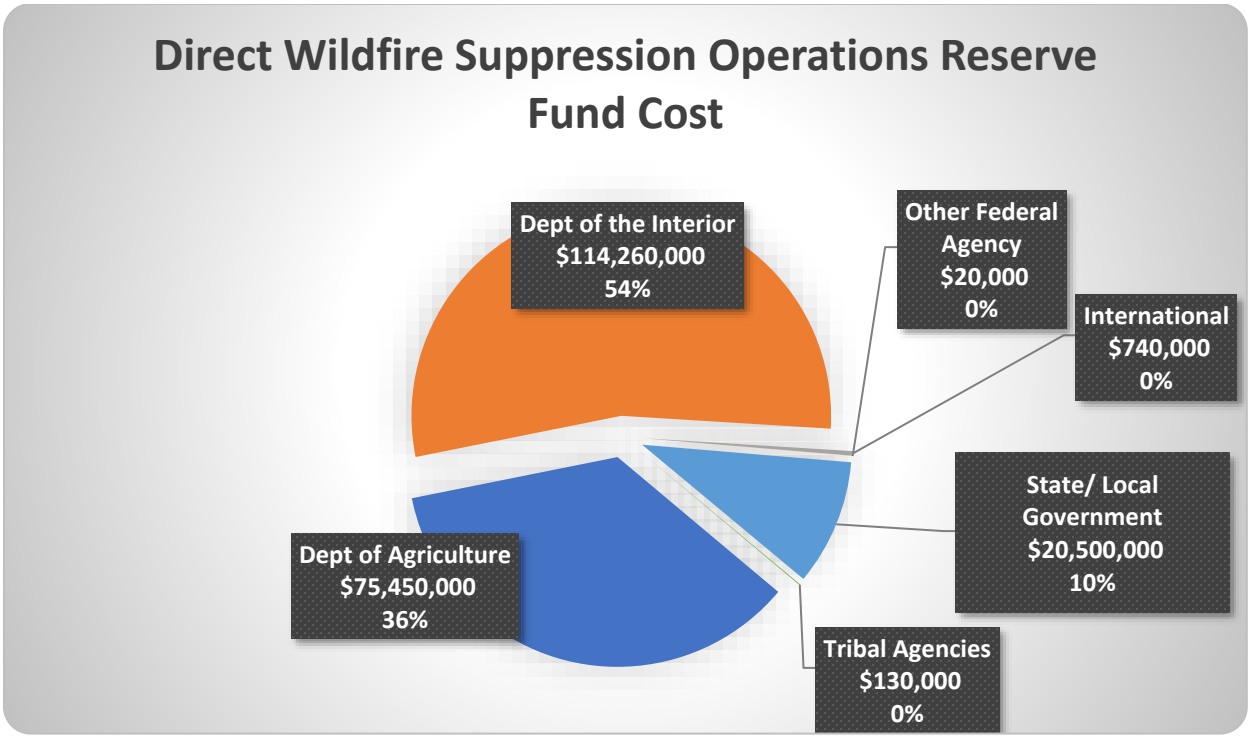

Figure 10. Chart that shows Interior Department 2022 direct costs funded by Wildfire Suppression Operations Reserve Fund resources, by the partner receiving support.

Note: The Interior Department contributed significantly to its partners' wildland fire suppression operations in 2022 (Interagency Support portrays costs not associated with a particular host agency).

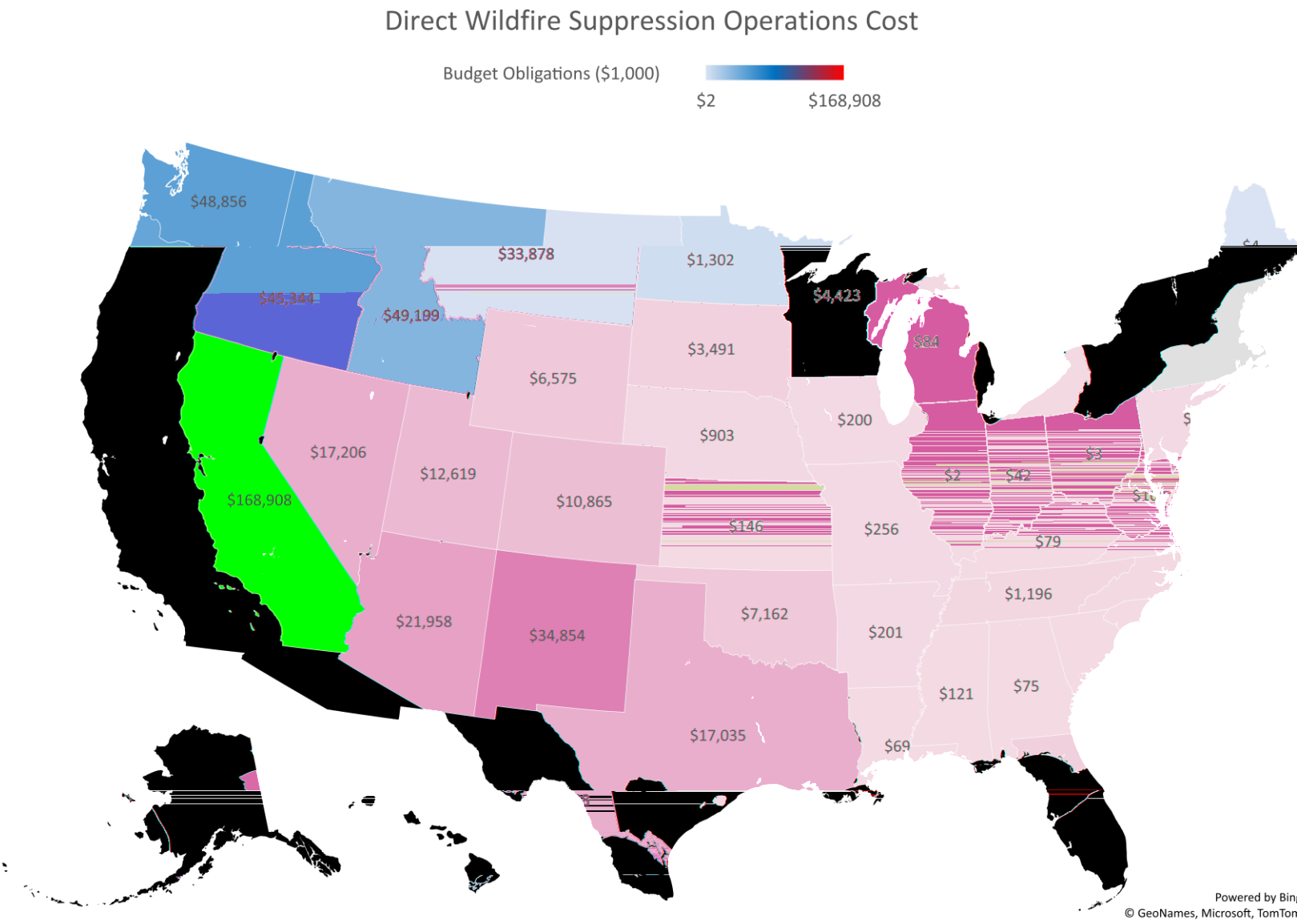

Figure 11. Map that shows Interior Department's direct 2022 Suppression costs by State.

Notes: Suppression costs shown include those funded by Suppression Operations Reserve Fund and regular Suppression Operations appropriations. In addition, approximately $59 million was obligated at the national level to support suppression operations.

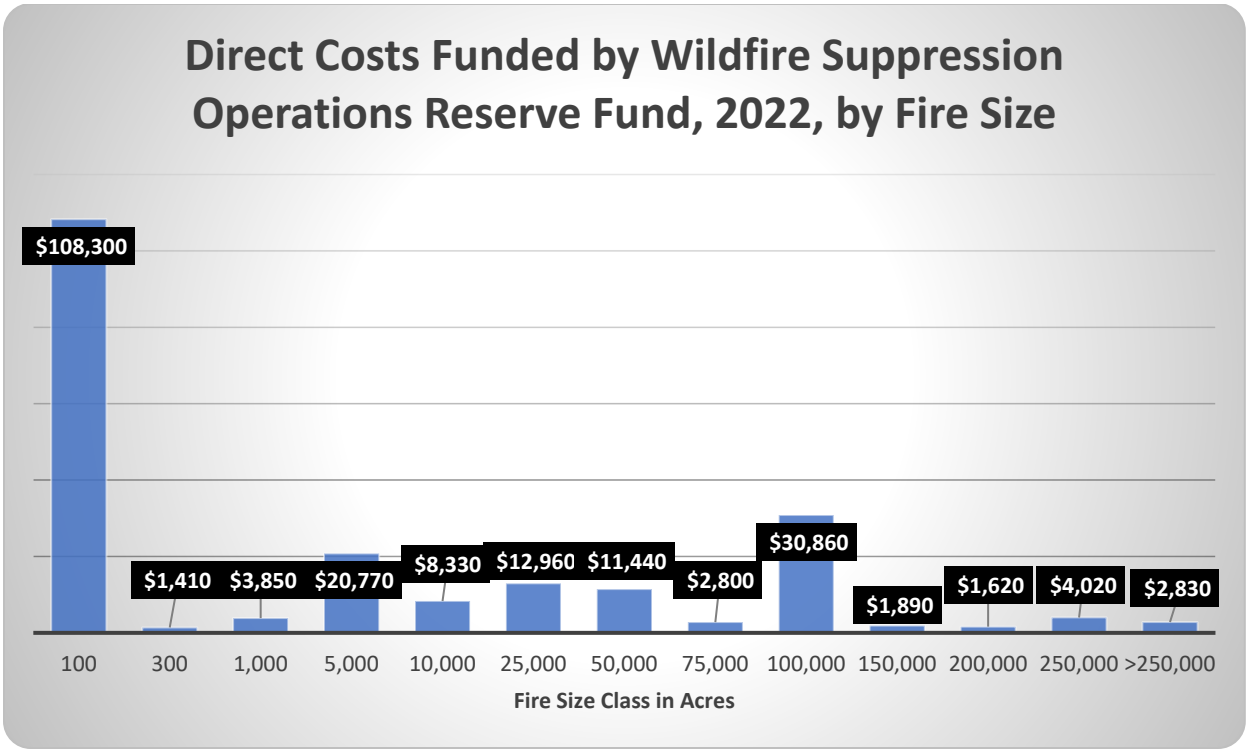

Figure 12. Chart that shows Interior Department 2022 direct costs funded from Wildfire Suppression Operations Reserve Fund resources, by fire size, in acres.

Note: Dollar figures are expressed in $1,000.

Lessons Learned

Throughout this analysis, several themes emerged:

- As climate change continues, weather patterns continue to shift and pose challenges for wildland fire management and alter fuel conditions that increase the likelihood of extreme wildfire events; ultimately, the pace, scale, and effectiveness of fire suppression, fuels treatment, and rehabilitation efforts must be increased to attain desired outcomes.
- The wildland fire workforce is the most critical component for WFM mission delivery, program effectiveness, and efficiency. Recruitment and retention of personnel in adequate numbers requires improvement. Because operational success also relies heavily on joint agency coordination and action, adequate composition of the workforce is also essential for effective cross-boundary collaboration by individual agencies, among partner agencies, and in shared WFM processes and systems overall.

Recommended Enhancements

Additional investments in and strategic reform of the Interior Department's wildland fire management workforce is needed to provide greater, more sustainable capability to perform critical mission functions and continue to effectively serve the Interior Department, partners, stakeholders, and the public. Although the Interior Department has made improvements, more

work is needed. The demands on the current workforce are immense, and the Interior Department will require better adaptation to meet the increasing amount, complexity, and duration of the wildfire workload as well as the pre- and post-fire workload.

The President's 2024 Budget proposes significant reforms to increase the Nation's investments in the WFM workforce. The cornerstone of these long-term reforms is a permanent increase in pay. The Administration proposes legislation to establish a special base rate salary table for wildland firefighters, create a new premium pay category that provides additional compensation for all hours a wildland fire responder is mobilized on an incident, and establish a streamlined pay cap that provides waiver authority to the Secretary using specific criteria. The budget funds these Federal pay reforms and similar pay increases for Tribal personnel. These proposals build upon the historic reforms in the Infrastructure Investment and Jobs Act (also known as the Bipartisan Infrastructure Law [BIL]) to ensure that wildland fire personnel receive the enhanced support they need to meet evolving mission demands.

The budget proposal also includes a request for funds to expand wildland firefighter and support personnel capacity, increased support for wildland firefighter health and well-being, and investments in increased housing for wildland firefighters.

Based on wildfire trends, expanded pre- and post-fire mitigation efforts are needed to better ensure successful outcomes throughout longer fire seasons and across geographic areas. Additional investments in predictive services and monitoring may facilitate better strategy development and evidence-based decision making before, during, and after incidents; strengthen cross-boundary coordination; and improve communication across agencies, jurisdictions, and stakeholders (including the public).